

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings, of claims in the application:

5 Claims 1-113 (Cancelled)

114. (new): A composition comprising a double D-loop, said double-D loop comprising:
a target nucleic acid;
a first single stranded targeting polynucleotide comprising: a central region and
two flanking regions which flank the central region of said first single stranded
targeting polynucleotide and which form homology clamps with said target nucleic
acid;
a second single stranded targeting polynucleotide comprising: a central region and
two flanking regions which flank the central region of said second single stranded
targeting polynucleotide and which form homology clamps with said target nucleic
acid; and
a locking complex formed by the central regions of said first and said second single
stranded polynucleotides,
wherein the half-life of the double D-loop is at least about 5-fold longer than said
double D-loop without said locking complex.

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20 115. (new): The composition of Claim 114 wherein said locking complex is a triplex or
a quadruplex.

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116. (new): A composition comprising a double D-loop, said double D loop comprising:
a target nucleic acid;
a first single stranded targeting polynucleotide comprising: a central region and
two flanking regions which flank the central region of said first single stranded
targeting polynucleotide and which form homology clamps with said target nucleic
acid;
a second single stranded targeting polynucleotide comprising: a central region and

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two flanking regions which flank the central region of said second single stranded targeting polynucleotide and which form homology clamps with said target nucleic acid; and

5 a locking complex formed by the central regions of said first and said second single stranded polynucleotides,

wherein said locking complex comprises a triplex.

117. (new): A composition comprising a double D-loop, said double D loop comprising: a target nucleic acid;

10 a first single stranded targeting polynucleotide comprising: a central region and two flanking regions which flank the central region of said first single stranded targeting polynucleotide and which form homology clamps with said target nucleic acid;

15 a second single stranded targeting polynucleotide comprising: a central region and two flanking regions which flank the central region of said second single stranded targeting polynucleotide and which form homology clamps with said target nucleic acid; and

a locking complex formed by the central regions of said first and said second single stranded polynucleotides,

20 wherein said locking complex comprises a quadruplex.

118. (new): A composition comprising a double D-loop, said double D loop comprising: a target nucleic acid;

25 a first single stranded targeting polynucleotide comprising: a central region and two flanking regions which flank the central region of said first single stranded targeting polynucleotide and which form homology clamps with said target nucleic acid;

30 a second single stranded targeting polynucleotide comprising: a central region and two flanking regions which flank the central region of said second single stranded targeting polynucleotide and which form homology clamps with said target nucleic acid; and

a locking complex formed by the central regions of said first and said second single stranded polynucleotides,
wherein said locking complex comprises Z-form duplex.

5 119. (new): A composition comprising a double D-loop, said double-D loop comprising:
a target nucleic acid;
a first single stranded targeting polynucleotide comprising: a central region and
two flanking regions which flank the central region of said first single stranded
targeting polynucleotide and which form homology clamps with said target nucleic
10 acid;
a second single stranded targeting polynucleotide comprising: a central region and
two flanking regions which flank the central region of said second single stranded
targeting polynucleotide and which form homology clamps with said target nucleic
acid; and
15 a locking complex formed by the central regions of said first and said second single
stranded polynucleotides,
with the proviso that said locking complex is not an internal homology clamp.

120. (new): A composition comprising a double D-loop, said double-D loop comprising:
20 a target nucleic acid;
a first single stranded targeting polynucleotide comprising: a central region and
two flanking regions which flank the central region of said first single stranded
targeting polynucleotide and which form homology clamps with said target nucleic
acid;
25 a second single stranded targeting polynucleotide comprising: a central region and
two flanking regions which flank the central region of said second single stranded
targeting polynucleotide and which form homology clamps with said target nucleic
acid; and
a locking complex formed by the central regions of said first and said second single
30 stranded polynucleotides,
wherein said locking complex comprises at least one non-Watson-Crick base pair.

121. (new): A composition according to any one of Claims 114-120, further comprising at least one recombinase.

122. (new): The composition of Claim 121 wherein said recombinase is a species of prokaryotic recombinase.

5 123. (new): The composition of Claim 122, wherein said prokaryotic recombinase is a species of prokaryotic RecA protein.

124. (new): The composition of Claim 123, wherein said RecA protein species is *E. coli* RecA.

10 125. (new): The composition of Claim 121, wherein said recombinase is a species of eukaryotic recombinase.

126. (new): The composition of Claim 125, wherein said recombinase is a Rad51 recombinase.

127. (new): The composition of Claim 126, wherein said eukaryotic recombinase is a complex of recombinase proteins.

15 128. (new): The composition of Claim 116 further comprising a secondary polynucleotide that stabilizes said triplex.

129. (new): The composition according to any one of Claims 114-120, wherein said locking complex comprises DNA, RNA or peptide nucleic acid.

20 130. (new): The composition according to any one of Claims 114-120, wherein at least one of said single stranded targeting polynucleotides is linked to at least one non-protein chemical substituent.

25 131. (new): The composition of Claim 130 wherein said substituent is selected from the group consisting of intercalators, cross-linking moieties, labels, photoactive moieties, nucleic acid scission inducing moieties, purification tag moieties, and nucleic acid modification moieties.

132. (new): The composition according to any one of Claims 114-120, wherein at least one of said single stranded targeting polynucleotides is linked to at least one protein substituent.

133. (new): A cell comprising a composition according to any one of Claims 114-120.

5 134. (new): The cell of Claim 133 which is a eukaryotic cell.

135. (new): The cell of Claim 122 which is a prokaryotic cell.

136. (new): A kit comprising a first and a second single stranded targeting polynucleotide, wherein said first and said second targeting polynucleotides are substantially complementary to each other and further wherein said first and said second 10 targeting polynucleotides each comprise:

a first and a second homology clamp that wherein said first and said second homology clamps substantially correspond to or are substantially complementary to a preselected target nucleic acid sequence; and

a locking nucleic acid sequence positioned between said first and said second homology clamps wherein said locking nucleic acid sequence is capable of 15 stabilizing a locking complex in a double D-loop structure, wherein the half-life of said structure is at least about 5-fold longer than said structure without said locking complex.

20 137. (new): The kit according to Claim 136 further comprising at least one recombinase.

138. (new): The kit according to Claim 136 wherein said locking complex is a triplex or a quadruplex.

139. (new): A composition comprising a double D-loop comprising a target nucleic acid 25 and a first and a second single stranded targeting polynucleotide, wherein said first and said second targeting polynucleotides are substantially complementary to each other and further wherein said first and said second targeting polynucleotides each comprise:

a first and second homology clamp wherein said first and said second homology clamps substantially correspond to or are substantially complementary to a preselected target nucleic acid sequence; and

a locking nucleic acid sequence positioned between said first and said second homology clamps wherein said locking nucleic acid sequence is capable of stabilizing a locking complex in a double D-loop structure, wherein the half-life of said structure is at least about 5-fold longer than said structure without said locking complex.

140. (new): The composition according to Claim 139 further comprising at least one recombinase.

141. (new): The composition according to Claim 139 wherein said locking complex is a triplex or a quadruplex.

142. (new): The composition according to Claim 139 further comprising a protein bound to said locking complex.

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